Gallbladder Tumors

Overview

- Definition/Classification of Gallbladder Tumors
  - Non neoplastic lesions
  - Neoplastic lesions.
- Clinical Presentation
- Diagnosis/ evaluation
- Management
- Examples: Case Presentations
- Treatment Recommendations

Questions/Facts

- Why is evaluation and management of Gallbladder tumors important?
  1. Advanced gallbladder cancer has a dismal prognosis despite radical surgery.
  2. Cure is more likely achieved in the early stage of disease.
  3. Early carcinoma of the gallbladder that is confined to the muscle wall can be safely treated with cholecystectomy alone.
  4. However, gallbladder cancer is found in only ~ 3-8% in cholecystectomies done for removal of gallbladder tumors.
- How can we accurately determine which gallbladder tumors are malignant vs. those that are benign.

Definition: The term “polypoid lesion of the gallbladder” (PLG) refers to any elevated lesion/mass of the mucosal surface of the gallbladder wall.

TRUE TUMORS
- Adenoma, Papillary
- Adenoma, Non-papillary
- Lipomas
- Hemangiomas
- Leiomyomas
- Granular cell tumor

PSEUDOTUMORS
- Adenomyomas
- Cholesterol polyps
- Inflammatory polyps
- Hypertrophic mucosal folds
- Heterotopic mucosa
  - Stomach, pancreas or liver
- Miscellaneous:
  - Fibroxanthogranulomatous inflammation
  - Parasitic infection
  - Non-echogenic calculus disease mimicking malignancy i.e. Mirrizzi Syndrome.
Classification

• Non-neoplastic (95%)
  – **Cholesterol polyp**: lamina propria is infiltrated with lipid-laden foamy macrophages: (60-70% of all GB polyps.
    • <10 mm in size
    • Usually multiple.
  – **Adenomyomatosis (~25%)**: hyperplastic lesion caused by excessive proliferation of the surface epithelium= invaginates into the muscularis, “Rokitansky-Ashoff”
    • Appears as a solitary polyp (1-2 cm).
  – **Inflammatory polyps(10%)**: Granulation and fibrous tissue due to chronic inflammation. Solitary and <10 mm.
    • Mucosal folds, biliary sludge, and impacted stones lacking an acoustic shadow can mimic a gallbladder cancer.

• Neoplastic (~5%)
  – **Adenomas(4%) 5-20 mm. generally solitary and associated with gallstones.**
  – **Miscellaneous neoplastic polyps (1%)**
    – leiomyomas, lipomas, neurofibromas and carcinoids
  – **Adenoma→ Carcinoma ?? Not clear**

Diagnosis

• Most found on conventional **Ultrasoundography**
  – Appear fixed, hyperechoic material protruding into the lumen +/- acoustic shadow.
  – Utility of US to make Dx. 20% <1 cm, 80%-1 cm.
• **High-resolution ultrasonography**, have contributed to improved detection of PLG. Accuracy of ultrasonography for diagnosis of PLG~70 to 90%.
• **Contrast-enhanced ultrasonography** using per-flubutane (Sonazoid) is under investigation in the differential diagnosis of PLG.
• **Contrast-enhanced computed tomography** – shows when a mass has replaced the gallbladder or thickened the gallbladder wall.
• **Magnetic resonance imaging** – disadvantages of poor spatial and contrast resolution.

Endoscopic Ultrasound

• The accuracy of EUS in correctly distinguishing the polyp was 97%, superior to the 76% accuracy of abdominal ultrasound.

• Although there is not enough evidence to suggest that EUS is the one definitive diagnostic modality for making this determination.

Risk Factors associated with Malignancy

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Risk factors Associated with CA</th>
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<tbody>
<tr>
<td>Yang et al</td>
<td>1992</td>
<td>Size &gt;10 mm, single, stones, age &gt;50 yrs</td>
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<tr>
<td>*Kubota et al</td>
<td>1995</td>
<td>Sessile shape, rapid growth, isoechogenicity</td>
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<tr>
<td>Collett et al</td>
<td>1998</td>
<td>Size &gt;10 mm</td>
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<tr>
<td>Terzi</td>
<td>2000</td>
<td>Age &gt;50 yrs, size &gt;10 mm, stone</td>
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<td>Mainprize</td>
<td>2000</td>
<td>Size &gt;10 mm</td>
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<tr>
<td>Yeh et al</td>
<td>2001</td>
<td>Age &gt;50 yrs, size &gt;10 mm</td>
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<tr>
<td>He et al</td>
<td>2002</td>
<td>Age &gt;50 yrs, size &gt;10 mm, sessile, stone</td>
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<tr>
<td>Sun et al</td>
<td>2004</td>
<td>Size &gt;10 mm, age &gt;50 yrs, sessile, stone</td>
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<td>Chattopadhyay et al</td>
<td>2005</td>
<td>Size &gt;10 mm</td>
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<tr>
<td>Leung et al</td>
<td>2007</td>
<td>Presence of Sclerosing Cholangitis</td>
</tr>
<tr>
<td>Park et al</td>
<td>2008</td>
<td>Size &gt;10 mm, age ≥57 years</td>
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<tr>
<td>Cha et al</td>
<td>2011</td>
<td>Size &gt;15 mm, Diabetes Mellitus</td>
</tr>
<tr>
<td>Ferrone et al</td>
<td>2012</td>
<td>Size &gt;9 mm, age &gt;52 years, presence of gallstones, size &gt;9 mm, presence of invasion at the liver interface, wall thickening &gt;5 mm.</td>
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*Kubota et al. 13% of cancers were smaller than 10 mm

Risk Factors for Gallbladder CA

- Size > 10 mm - > than 4 cm, hepatic invasion and lymph node metastasis.
- Age >50.
- Gallstones: lead to long-term chronic inflammation.
- Primary Sclerosing cholangitis
- Diabetes Mellitus.
- Abnormal Pancreatice-biliary anatomy:
- Genetic Predispositions: a high incidence of gallbladder cancer include Chile, Poland, India, and Japan. There is also a very high incidence of this cancer among women in Northern India (21.5/100,000) and female Native American Indians (14.5/100,000).

Clinical Presentation

- Usually asymptomatic, found incidentally.
- Symptoms: RUQ pain, N, dyspepsia and mild jaundice.
  - 60% have Gallstones.
- Cholesterol polyps can detach and behave like stones.

Case #1

32 year-old woman presenting with RUQ pain, nausea and vomiting.

*mass appears adherent to the nondependent wall of the gallbladder without posterior shadowing.
*not mobile during real-time dynamic imaging with the patient in different positions.
Cholesterol Polyp

58 year-old Man with HCV, HBV infection with well compensated chronic liver disease presented with RUQ pain. Laboratory values significant for an elevated AFP of 234.

Case #2

MR Imaging

Segmental thickening of the GB wall, the identification of intramural diverticulae

Adenomyomatosis

- Incidence (3-6%)
- Epithelial Proliferation and hypertrophy of the muscular layer → Rokitansky-Aschoff Sinuses.
- Usually asymptomatic.
- Important to make diagnosis to avoid incorrect treatment.
Case #3

65 year-old Man who presented with RUQ pain, 20 lb weight loss. Ultrasound exam showed multiple gallstones, and ~ 2 cm mass in the neck of the gallbladder. LFTs = Tbil = 2.5, Alk P = 247. AST = 35

MRI Imaging

ERCP MRCP (MIP)

Operation

6 months Post op
Case #4

60 year-old morbidly obese man with history HCV, HIV and PSC well compensated chronic liver disease. He was found on surveillance CT-imaging to have a 2.0 cm gallbladder mass.

Case #5

72 year-old previously healthy presents with RUQ pain.

Case #4

Misdiagnosed as symptomatic cholelithiasis. 13 months later develops recurrent RUQ pain, fever and chills. Dx with subacute cholecystitis.

Case #4

Laparoscopic Exploration

MRI axial T1

Axial CT

US Longitudinal

Axial CT
Case #4
Conversion to Open Laparotomy: Segment 4/5 Resection

Locally Advanced Gallbladder CA
- Removal of gallbladder
- Removal of areas of liver invasion
- Portal lymph node dissection
- Remove and reconstruct areas of portal vein invasion
- Biliary reconstruction

Case #4
Postoperative Scan--2 years

Treatment algorithm of polypoid lesions of the gallbladder (PLG)

- Symptomatic
  - Lap Cholecystectomy
  - OPEN Size >2 CM, consider Radical Resx
- Asymptomatic
  - PLG>10 mm
  - PLG<10 mm
  - **Risk factors Present
  - **Risk factors: Age>50, Presence of Gallstones, DM, PSC, High Risk Population, or APBDJ
  - CLOSE OBSERVATION 3-6 Months US exam

The required duration of follow-up remains unknown.
Conclusions

- Polypoid lesions of the gallbladder remain a problem of concern to both patients and surgeons.
- Polyps larger > 1 cm and patient age >50 years are the two most important predictors for malignancy.
  - Associated gallstones, Solitary PLG, High risk population, DM, PSC,
- Laparoscopic cholecystectomy remains the operation of choice for PLG.
- Frozen section is advised during the operation to guide extended surgery if malignancy is confirmed.
- However, if the chance of malignancy is assessed to be high before operation, for example, PLG larger than 2 cm, open surgery is recommended to reduce the risk of tumor seeding associated with laparoscopic surgery.
- For asymptomatic PLG smaller than 1 cm, it is generally agreed that follow-up USG every 3 to 6 months is necessary to exclude rapidly growing malignant tumor.